

ABSTRACT OF THE DISCLOSURE

An X-ray projection exposure apparatus includes a mask chuck, a wafer chuck, an X-ray illuminating system, and an X-ray projection system. The mask chuck holds a reflection X-ray mask having a mask pattern thereon. The wafer chuck holds a wafer onto which the mask pattern is transferred. The X-ray illuminating system illuminates the reflection X-ray mask, held by the mask chuck, with X-rays. The X-ray projection optical system projects the mask pattern of the reflection X-ray mask onto the wafer held by the wafer chuck with a predetermined magnification. The mask chuck includes a mechanism for generating static electricity for attracting and holding the reflection X-ray mask by an electrostatic force. The invention also includes a device manufacturing method using such an X-ray projection exposure apparatus to transfer a mask pattern onto the wafer using the X-ray projection exposure apparatus.

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